1. An activated carbon matrix, comprising:

an activated carbon; and

between about 3 % and about 15 % by weight of a metal oxide;

wherein the metal oxide is uniformly dispersed within the activated carbon.

2. The activated carbon matrix of claim 1, wherein the metal oxide is selected from the group consisting of the oxides of Ca, Mg, Ba, and combinations thereof.

3. The activated carbon matrix of claim 2, wherein the metal oxide is magnesium oxide.

4. The activated carbon matrix of claim 1, comprising between about 5 % and about 10 % by weight of a metal oxide.

5. A process for preparing a media for filtering gaseous substances, comprising:

preoxidizing a carbon material to form preoxidized carbon;

grinding the preoxidized carbon;

combining the ground preoxidized carbon and a metal oxide to form a carbon mixture;

extruding the carbon mixture to form an extrudate;

carbonizing the extrudate to form a porous carbonaceous mixture; and

activating the porous carbonaceous mixture.

6. The process of claim 5, wherein grinding the preoxidized carbon forms granules.

7. The process of claim 6, further comprising grinding the carbon mixture prior to extruding the carbon mixture.

8. The process of claim 7, wherein the carbon mixture is combined with a binder prior to extruding the carbon mixture.

9. The process of claim 8, wherein the carbon mixture and binder is combined with a solvent prior to extruding the carbon mixture

10. The process of claim 5, wherein grinding the preoxidized carbon forms a powder.

11. The process of claim 10, wherein the ground preoxidized carbon and the metal oxide are combined in the presence of a binder.

12. The process of claim 11, wherein the binder is coal tar pitch.

13. The process of claim 12, wherein the ground preoxidized carbon, the metal oxide, and the coal tar pitch are combined in the presence of water to form a carbon mixture.

14. The process of claim 13, wherein the carbon mixture formed is a paste.

15. The process of claim 5, wherein the coal is peroxidized in air at approximately 600 °F.

16. The process of claim 5, wherein a metal oxide at about 3 % to about 15 % by weight is combined with ground preoxidized carbon.

17. The process of claim 16, wherein a metal oxide at about 5 % to about 10 % by weight is combined with the ground preoxidized carbon.

18. The process of claim 15, wherein the extrudate is carbonized in the absence of air at approximately 1000 °F.

19. The process of claim 18, wherein the carbonaceous mixture is activated with steam between about 1600 °F and about 1700 °F.

20. The process of claim 5, further comprising crushing the carbon material before preoxidizing the coal.

21. The process of claim 5, further comprising crushing the carbonaceous mixture prior to activating the carbonaceous mixture.

22. The process of claim 5, wherein the carbon material to be preoxidized is selected from the group consisting of: coconut shell and coal.

23. The process of claim 22, wherein the coal is bituminous low ash coal.

24. The process of claim 5, wherein the metal oxide is selected from the group consisting of the oxides of Ca, Mg, Ba, and combinations thereof.

25. The process of claim 24, wherein the metal oxide is magnesium oxide.

26. A method of forming an activated carbon-metal oxide matrix comprising:
preoxidizing a carbon material to form a preoxidized carbon;
grinding the preoxidized carbon to form ground carbon;
combining the ground carbon, the metal oxide and coal tar pitch to form a paste;
extruding the paste to form an extrudate;
carbonizing the extrudate to form a carbonaceous mixture; and
activating the carbonaceous mixture with steam.

27. The method of claim 26, wherein the ground carbon is a powder.

28. The method of claim 26, wherein the ground carbon is granules.

29. The method of claim 28, wherein the act of combining the ground carbon, metal oxide and coal tar pitch includes grinding metal oxide combined with the ground carbon prior to combining with the coal tar pitch.

30. The method of claim 26, wherein the metal oxide is combined at about 3 % to about 15 % by weight.

31. The method of claim 30, wherein the metal oxide is combined at about 5 % to about 10 % by weight.

32. The method of claim 26, wherein the carbon material is preoxidized in air at approximately 600 °F.

33. The method of claim 32, wherein the extrudate is carbonized in the absence of air at approximately 1000 °F.

34. The method of claim 33, wherein the carbonaceous mixture is activated with steam between about 1600 °F to about 1700 °F.

35. The method of claim 26, wherein the carbon material is coal.

36. The method of claim 26. wherein the metal oxide is selected from the group consisting of the oxides of Ca, Mg, Ba, and combinations thereof.

37. The method of claim 36, wherein the metal oxide is magnesium oxide.

38. A method for removing an odorous compound from a gaseous stream comprising:

forming an activated carbon-metal oxide matrix, wherein the matrix has an hydrogen sulfide breakthrough capacity greater than about 0.3 gH_2S/ccC;

contacting the gaseous stream with the matrix;

sorbing the odorous compound; and

removing the gaseous stream from the matrix.

39. The method of claim 38, wherein the matrix has an hydrogen sulfide breakthrough capacity greater than about 0.46 gH_2S/ccC.

40. The method of claim 39, wherein the matrix has an hydrogen sulfide breakthrough capacity greater than about 0.54 gH_2S/ccC.

41. The method of claim 39, wherein the matrix has an hydrogen sulfide breakthrough capacity greater than about 0.65 gH_2S/ccC.

42. The method of claim 38, wherein the metal oxide is selected from the group consisting of the oxides of Ca, Mg, Ba, and combinations thereof.

43. The method of claim 42, wherein the metal oxide is magnesium oxide.

44. The method of claim 38, wherein the gaseous stream includes moisture content less than about 95 % RH.

45. The method of claim 44, wherein the gaseous stream has a moisture content of about 60 % to about 95% RH.

46. A method for reducing concentration of an odorous compound in a gaseous stream comprising:

contacting the gaseous stream with an activated carbon material comprising between about 3 % and about 15 %, by weight, of a metal oxide;

sorbing the odorous compound on the activated carbon material to produce a product stream having reduced concentrations of the odorous compound; and

removing the product stream from the activated carbon material.

47. The method of claim 46, wherein the gaseous stream is contacted with an activated carbon material comprising between about 5 % and about 10 %, by weight of a metal oxide.

48. The method of claim 46, wherein the odorous compound is selected from the group consisting of: volatile organic compounds, acidic gases, and sulfides, and combinations thereof.

49. The method of claim 48, wherein the odorous compound is a sulfide.

50. The method of claim 49, wherein the sulfide is hydrogen sulfide.

51. The method of claim 48, wherein the metal oxide is selected from the group consisting of the oxides of Ca, Mg, Ba, and combinations thereof.

52. The method of claim 51, wherein the metal oxide is magnesium oxide.

53. The method of claim 46, wherein the gaseous stream includes a moisture content less than about 95 % RH.

54. The method of claim 53, wherein the moisture content is between about 60 % to about 95% RH.

55. A method for reducing the concentration of a sulfide present in a gaseous discharge from a waste water treatment system comprising:

providing a gaseous discharge including at least one volatile organic compound and hydrogen sulfide;

contacting the gaseous discharge with an activated carbon-metal oxide matrix comprising about 3 % to about 15 %, by weight, of a metal oxide;

sorbing the sulfide on the matrix producing a product stream having a sulfide concentration less than about 0.1 ppm; and

removing the product stream from the activated carbon-metal oxide matrix.

56. The method of claim 55, wherein the gaseous discharge is contacted with an activated carbon-metal oxide matrix comprising about 5 % to about 10 %, by weight, of a metal oxide.

57. The method of claim 55, further comprising sorbing the at least one volatile organic compound on the matrix.

58. The method of claim 55, wherein the metal oxide is selected from the group consisting of the oxides of Ca, Mg, Ba, and combinations thereof.

59. The method of claim 58, wherein the metal oxide is magnesium oxide.

60. The method of claim 55, wherein the gaseous discharge has a moisture content less than about 95 % RH.

61. The method of claim 60, wherein the moisture content is between about 60 % to about 95 % RH.

62. A metal oxide-carrying activated carbon for removing hydrogen sulfide from a gas comprising:

an activated carbon-metal oxide matrix obtained by mixing about 3 % to about 15 %, by weight, of a metal oxide with a carbon material to form a carbon mixture, carbonizing the mixture and activating the mixture.

63. The metal oxide-carrying activated carbon of claim 62, wherein about 5 % to about 10 %, by weight, of a metal oxide is mixed with a carbon material.

64. The metal oxide-carrying activated carbon of claim 62, wherein the metal oxide is selected from the group consisting of the oxides of Ca, Mg, Ba, and combinations thereof.

65. The metal oxide-carrying activated carbon of claim 64, wherein the metal oxide is magnesium oxide.